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EXAMINER	
LU, KUEN S	

ART UNIT	PAPER NUMBER
2167	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/078,447	ESHLEMAN ET AL.	
	Examiner	Art Unit	
	Kuen S Lu	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/21/02 & 7/25/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The Action is responsive to Applicant's Application, filed February 21, 2002.

Priority

2. It is noted and considered that this application claims subject matter disclosed in prior Application No. 60/270,126, filed February 21, 2001.

Information Disclosure Statement

3. The Information Disclosure Statement filed July 25, 2002 has been considered.

Drawings

4. The drawings filed February 21, 2002 have been accepted.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Underwood (U.S. Patent 6,718,535) in view of Powell et al. (U.S. Patent Application 2002/0073167, hereafter "Powell").

As per claim 1, Underwood teaches the following:

"**a resource abstraction layer on the application server**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction is equivalent to the Applicant's **a resource abstraction layer on the application server**); and

"**a remote server unit in communication with the application server and a database subscription manager**" (See Figs. 52 and 57, col. 126, lines 30-35 wherein Underwood's internet web server is the remote server for communicating database server and application server is equivalent to the Applicant's **a remote server unit in communication with the application server and a database subscription manager**).

Underwood does not explicitly teach "**wherein the remote server unit includes a cache DBMS server**", although Underwood teaches a proxy/cache server in the internet for access control, among other roles in Fig. 125 and col. 294, lines 43-52.

However, Powell teaches "**wherein the remote server unit includes a cache DBMS server**" at Fig. 1 and col. Page 3, [0040] where a master cache database attends a central proxy server to cache web pages.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database on the proxy server because the implementation would have enabled Underwood's server systems to improve network

performance by caching web pages at the internet and readying the pages closer and available to user on demand.

The combined teaching of the Powell and Underwood references the following: "**wherein the database subscription manager is in communication with the central DBMS server, wherein the application server sends queries for a plurality of users to the remote server unit via the resource abstraction layer**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction, and Powell: Fig. 1 and Page 3, [0040] wherein Powell's end user queries via data extractors, the database subscription manager which communicates the proxy server and master cache database is equivalent to the Applicant's **wherein the database subscription manager is in communication with the central DBMS server, wherein the application server sends queries for a plurality of users to the remote server unit via the resource abstraction layer**),

"**wherein the remote server unit processes each query through the cache DBMS server, and wherein the cache DBMS server checks a data structure consisting of subscribed query predicates**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **wherein the remote server unit processes each query through the cache DBMS server, and wherein the cache DBMS server checks a data structure consisting of subscribed query predicates**), and

"**wherein, if the query is contained within prior query predicates, the remote server unit sends the local query result to the application server**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are firstly consulted with local over the master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **wherein, if the query is contained within prior query predicates, the remote server unit sends the local query result to the application server**), and

"**wherein if the query is not contained within subscribed predicates, the remote server unit sends the query to the data subscriber manager**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are firstly consulted with local over the master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **wherein if the query is not contained within subscribed predicates, the remote server unit sends the query to the data subscriber manager),**

"**wherein the database subscription manager retrieves a result from the central DBMS server**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the database subscription manager retrieves a result from the central DBMS server**), and

"**wherein the database subscription manager derives the query results from the central DBMS server**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache

database and being available to users is equivalent to the Applicant's **wherein the database subscription manager derives the query results from the central DBMS server)**, and

"**wherein the database subscription manager sends the query results to the remote unit, and creates a subscription to the query predicate on behalf of the remote server unit**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the database subscription manager sends the query results to the remote unit, and creates a subscription to the query predicate on behalf of the remote server unit)**, "**wherein the query results are added to the cache database and the query predicate is added to the query predicate data structure on the remote server unit, completing a subscription to that query predicate**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the query results are added to the cache database and the query predicate is added to the query predicate data structure on the remote server unit, completing a subscription to that query predicate)**.

As per claim 2, the combined teaching of the Powell and Underwood references "**wherein the resource abstraction layer is embedded in a database application programming interface**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein

Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction is equivalent to the Applicant's **wherein the resource abstraction layer is embedded in a database application programming interface**).

As per claim 3, the combined teaching of the Powell and Underwood references "**wherein the database application programming interface is a JDBC client driver**" (See Underwood: Fig. 57 and col. 133, lines 39-43 wherein Underwood's JDBC or ODBC interfaces clients and database server is equivalent to the Applicant's **wherein the database application programming interface is a JDBC client driver**).

As per claim 4, the combined teaching of the Powell and Underwood references "**wherein the database application programming interface is a ODBC client driver**" (See Underwood: Fig. 57 and col. 133, lines 39-43 wherein Underwood's JDBC or ODBC interfaces clients and database server is equivalent to the Applicant's **wherein the database application programming interface is a ODBC client driver).**

As per claim 5, the combined teaching of the Powell and Underwood references "**wherein the resource abstraction layer comprises a distribution policy, wherein the distribution policy directs the queries to one of a plurality of remote server units**" (See Powell: Page 1, [0002] wherein Powell's proxy caching is to speed up the distribution of internet content is equivalent to the

Applicant's **wherein the resource abstraction layer comprises a distribution policy, wherein the distribution policy directs the queries to one of a plurality of remote server units**).

As per claim 6, the combined teaching of the Powell and Underwood references "**wherein the plurality of remote server units are housed in a data center with the application server and the DBMS server**" (See Underwood: col. 295, lines 56-61 wherein Underwood's data center house the entire facility suggest a data center facility having all servers is equivalent to the Applicant's **wherein the plurality of remote server units are housed in a data center with the application server and the DBMS server**.

As per claim 7, the combined teaching of the Powell and Underwood references "**wherein the plurality of remote server units are housed in a data center apart from the application server and the DBMS server**" (See Underwood: Fig. 126 and col. 295, line 66 – col. 296, line 10 wherein Underwood's central database and central management are separated from other geographical regional facilities is equivalent to the Applicant's **wherein the plurality of remote server units are housed in a data center apart from the application server and the DBMS server**).

As per claim 8, the combined teaching of the Powell and Underwood references "**wherein a first portion of the plurality of remote server units are housed in a data**

center with the application server and the DBMS server, and wherein a second portion of the plurality of remote server units are housed in a location geographically remote from the data center" (See Underwood: Fig. 126 and col. 295, line 66 – col. 296, line 10 wherein Underwood's central database and central management are separated from other geographical regional facilities is equivalent to the Applicant's **wherein a first portion of the plurality of remote server units are housed in a data center with the application server and the DBMS server, and wherein a second portion of the plurality of remote server units are housed in a location geographically remote from the data center)**.

As per claim 9, the combined teaching of the Powell and Underwood references the following:

"**a database server driver comprising a database listener function, a query parser function and a database query fulfillment function**" (See Powell: Fig. 2 wherein Powell's user queries database and retrieves results via internet suggests teaching of database listener function is implemented and at Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers suggests teaching of database query and data retrieval is equivalent to the Applicant's **a database server driver comprising a database listener function, a query parser function and a database query fulfillment function**); and

"**a query execution manager comprising a query execution function, and wherein the database listener function receives the queries from the application server**

and passes the queries to the query parser function, and wherein the query parser function parses the queries into structured query language queries and passes the structured query language queries to the query fulfillment function, and wherein the query fulfillment function interacts with the query execution function to obtain the result from the cache DBMS server" (See Powell: Fig. 2 wherein Powell's user queries database and retrieves results via internet suggests teaching of database listener function is implemented and at Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers suggests teaching of database query and data retrieval is equivalent to the Applicant's **a query execution manager comprising a query execution function, and wherein the database listener function receives the queries from the application server and passes**
the queries to the query parser function, and wherein the query parser function parses the queries into structured query language queries and passes the structured query language queries to the query fulfillment function, and wherein the query fulfillment function interacts with the query execution function to obtain the result from the cache DBMS server).

As per claim 10, the combined teaching of the Powell and Underwood references the following:

"**wherein the cache DBMS server comprises a cache manager function, a cache description handler function, a cache containment function, a notification**

processor, and a space manager, wherein the cache manager function interfaces with the query parser function and the cache containment function to determine whether the structured query language queries can be satisfied from the cache DBMS server" (Powell: See Page 12, [0134] wherein Powell's cache server receives request for web objects, determining if the objects cached, calling miss management, identifying URLs, retrieving the objects and injecting to the cache database is equivalent to the Applicant's **wherein the cache DBMS server comprises a cache manager function, a cache description handler function, a cache containment function, a notification processor, and a space manager, wherein the cache manager function interfaces with the query parser function and the cache containment function to determine whether the structured query language queries can be satisfied from the cache DBMS server**);, and

"**wherein the cache description handler updates the subscribed query predicates and provides a predicate usage information to the space manager**" (Powell: Page 1, [0008] wherein Powell's cache space management for placing and displacing web objects is equivalent to the Applicant's **wherein the cache description handler updates the subscribed query predicates and provides a predicate usage information to the space manager**), and

"**wherein the notification processor receives notification messages from the database subscription manager and propagates an effect of the notification messages to a cache database on the cache DBMS server**" (See Powell: Page 14, [0155]-[0156] wherein Powell's notifications are performed between caching and

database modules is equivalent to the Applicant's **wherein the notification processor receives notification messages from the database subscription manager and propagates an effect of the notification messages to a cache database on the cache DBMS server**).

As per claim 11, Underwood teaches the following:

"**a modified database client driver on the application server, wherein the modified database client driver includes a resource abstraction layer**" (See col. 147, line 20 and col. 149, steps 9-10 wherein Underwood's database client software, including ODBC driver is installed in the application Server environment is equivalent to the Applicant's **a modified database client driver on the application server, wherein the modified database client driver includes a resource abstraction layer**);

"**an application logic on the application server, wherein the application logic sends a user inquiry to the modified database client driver for processing and wherein the application logic receives a result from the modified database client driver**" (See col. 119, lines 28-34 wherein Underwood's database access services utilizes based SQL API approach to access database through ODBC driver is equivalent to the Applicant's **an application logic on the application server, wherein the application logic sends a user inquiry to the modified database client driver for processing and wherein the application logic receives a result from the modified database client driver**); and

"at least one remote server unit in communication with the application server and at least one database subscription manager, wherein the remote server unit includes a modified database server driver, ... DBMS server, and a query engine" (See Fig. 51 and wherein Underwood's WWW server communicates with application servers and database sources via public network where database access is via ODBC driver to query the database is equivalent to the Applicant's **at least one remote server unit in communication with the application server and at least one database subscription manager, wherein the remote server unit includes a modified database server driver, ... DBMS server, and a query engine**).

Underwood does not explicitly teach the DBMS server is a cache DBMS server.

However, Powell teaches "**wherein the remote server unit includes a cache DBMS server**" at Fig. 1 and col. Page 3, [0040] where a master cache database attends a central proxy server to cache web pages.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database on the proxy server because the implementation would have enabled Underwood's server systems to improve network performance by caching web pages at the internet and readying the pages closer and available to user on demand.

The combined teaching of the Powell and Underwood references the following: **"wherein the cache DBMS server includes a cache database and a data structure containing currently subscribed query predicates"** (See Powell: Fig. 6 and Page 8,

[0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **wherein the cache DBMS server includes a cache database and a data structure containing currently subscribed query predicates**), and

"**wherein the at least one database subscription manager is in communication with the least one central DBMS server**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction, and Powell: Fig. 1 and Page 3, [0040] wherein Powell's end user queries via data extractors, the database subscription manager which communicates the proxy server and master cache database is equivalent to the Applicant's **wherein the at least one database subscription manager is in communication with the least one central DBMS server**),

"**wherein the resource abstraction layer receives the user inquiry from the modified client database driver and sends the user inquiry to the modified server database driver on the at least one remote server unit, wherein the modified server database driver sends the user inquiry to the cache DBMS server**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction, and Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers via data

extractor server for delivering result to the user is equivalent to the Applicant's **wherein the resource abstraction layer receives the user inquiry from the modified client database driver and sends the user inquiry to the modified server database driver on the at least one remote server unit, wherein the modified server database driver sends the user inquiry to the cache DBMS server**), and

"**wherein the modified server database driver receives the result from the cache DBMS server**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the modified server database driver receives the result from the cache DBMS server**),

"**wherein the cache DBMS server uses the query engine to check the predicate data structure for a locally contained result**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **wherein the cache DBMS server uses the query engine to check the predicate data structure for a locally contained result**), and

"**wherein, if the local result exists, the cache DBMS server sends the local query result to the modified server database driver as the result, and wherein if the local result is nonexistent, the cache DBMS server sends the user inquiry to the at least one data subscription manager**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are firstly consulted with local over the master cache database servers via data extractor server for delivering result to the user is

equivalent to the Applicant's **wherein, if the local result exists, the cache DBMS server sends the local query result to the modified server database driver as the result, and wherein if the local result is nonexistent, the cache DBMS server sends the user inquiry to the at least one data subscription manager**),

"**wherein the at least one database subscription manager retrieves the result from the at least one central DBMS server**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the at least one database subscription manager retrieves the result from the at least one central DBMS server**), and

"**wherein the at least one database subscription manager derives a plurality of predicates from a plurality of user inquires processed by the at least one central DBMS server**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the at least one database subscription manager derives a plurality of predicates from a plurality of user inquires processed by the at least one central DBMS server**), and

"**wherein the at least one database subscription manager sends the plurality of predicates the cache DBMS server for updating the cache database**" (See Powell: Fig. 6 and Pages 8-9, [0092] wherein Powell's digital object is obtained from the data extractor servers for storing to the master cache database and being available to users is equivalent to the Applicant's **wherein the at least one database subscription**

manager sends the plurality of predicates the cache DBMS server for updating the cache database).

As per claim 12, Underwood teaches "**sending the transaction from the application server to a remote server unit, wherein the transaction is sent via a resource abstraction layer on the application server**" (See Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction and web page retrieval transaction is served by the web server).

Underwood does not explicitly teach "determining whether a local result exists in a cache database on the remote server unit", although Underwood teaches database servers at Fig. 57 and col. 119, lines 20-25.

However, Powell teaches "**determining whether a local result exists in a cache database on the remote server unit**" (See Fig. 6, steps 230-249 and Page 8, [0086] wherein Powell's determining if local cache database satisfying user's request or copy the request to the central cache database server).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database on the proxy server because the implementation would have enabled Underwood's server systems to improve network performance by caching web pages at the internet and readying the pages closer and available to user on demand.

The combined teaching of the Powell and Underwood references the following:

"**sending the local result from the remote server unit to the application server if the local result exists**" (See Powell: Fig. 1 and Page 3, [0040] wherein Powell's proxy server retrieves web pages and caches the pages to central cache database is equivalent to the Applicant's **sending the local result from the remote server unit to the application server if the local result exists**);

"**sending the transaction from the remote server unit to a data subscriber manager if the local result does not exist**" (See Powell: Fig. 6, steps 230-249 and Page 8, [0086] wherein Powell's determining if local cache database satisfying user's request or copy the request to the central cache database server is equivalent to the Applicant's **sending the transaction from the remote server unit to a data subscriber manager if the local result does not exist**),

"**wherein the database subscription manager retrieves a result from the central DBMS server**" (See Powell: Figs. 1-2, elements 34 and 36-37 and Page 3, [0039]-[0040] wherein Powell's web pages are transmitted to the internet site and each of the subscribing local cache database via satellite is equivalent to the Applicant's **wherein the database subscription manager retrieves a result from the central DBMS server**);

"**deriving on the database subscription manager a plurality of predicates from a plurality of transactions processed by the central DBMS server**" (Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are consulted with local or master cache database servers via data extractor server for delivering result to the user

is equivalent to the Applicant's **deriving on the database subscription manager a plurality of predicates from a plurality of transactions processed by the central DBMS server**);

"**sending the plurality of predicates from the database subscription manager to the remote server unit**" (See Powell: Fig. 6 and Page 8, [0085]-[0086] wherein Powell's queries and protocol are firstly consulted with local over the master cache database servers via data extractor server for delivering result to the user is equivalent to the Applicant's **sending the plurality of predicates from the database subscription manager to the remote server unit**); and

"**updating the cache database according to the plurality of predicates**" (See Powell: Page 1, [0008] wherein Powell's cache space management for placing and displacing web objects is equivalent to the Applicant's **updating the cache database according to the plurality of predicates**).

As per claims 13 and 17, Underwood teaches the following:

"**opening a serializable transaction on an application server**" (See col. 25, line 9, col. 123, lines 38-43 and col. 194, lines 15-16 wherein Underwood's transaction server serializex all excess calls, application transactions are distributed to one or more machines is equivalent to the Applicant's **opening a serializable transaction on an application server**).

Underwood does not explicitly teach "**placing an entry into a local update request queue on a remote server unit**".

However, wherein Powell's "**placing an entry into a local update request queue on a remote server unit**" (See Page 9, [0099] wherein Powell's request for digital object is placed in a transmission queue is equivalent to the Applicant's **placing an entry into a local update request queue on a remote server unit**).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database locally and on the proxy server because the implementation would have enabled Underwood's server systems to improve network performance by queuing transmission request of web pages and caching web pages at the internet and readying the pages closer and available to user on demand.

The combined teaching of the Powell and Underwood references the following: "**opening a remote transaction on a central DBMS server using a database subscription manager in response to an update request from the remote server unit**" (See Powell: Page 1, [0008] wherein Powell's cache space management for placing and displacing web objects is equivalent to the Applicant's **opening a remote transaction on a central DBMS server using a database subscription manager in response to an update request from the remote server unit**);
"**sending a plurality of updates from the database subscription manager to the remote server unit using data obtained from the central DBMS server**" (See Underwood: Fig. 57 and col. 119, lines 20-25 wherein Underwood's virtual machine is implemented between applications and underlying operating system to provide a layer of abstraction, and Powell: Fig. 1 and Page 3, [0040] wherein Powell's end user queries

via data extractors, the database subscription manager which communicates the proxy server and master cache database is equivalent to the Applicant's **sending a plurality of updates from the database subscription manager to the remote server unit using data obtained from the central DBMS server**);

"**processing the plurality of updates in a serialized manner on the remote server unit by checking the plurality of updates to identify predicates in the cache database, locking the predicates in the cache database, and starting a local transaction on a remote server unit**" (See Underwood: col. 25, line 9, col. 123, lines 38-43 and col. 194, lines 15-16 wherein Underwood's transaction server serializes all excess calls, application transactions are distributed to one or more machines, and Powell: Page 1, [0008] wherein Powell's cache space management for placing and displacing web objects is equivalent to the Applicant's **processing the plurality of updates in a serialized manner on the remote server unit by checking the plurality of updates to identify predicates in the cache database, locking the predicates in the cache database, and starting a local transaction on a remote server unit**); and "**thereby synchronizing the remote transaction and the local transaction**" (See Powell: Page 22, [0238] wherein Powell's servers synchronize with each other is equivalent to the Applicant's **thereby synchronizing the remote transaction and the local transaction**).

As per claim 14, Underwood teaches the following:

"**opening a read committed transaction on an application server**" (See col. 23, 11-16 wherein Underwood's transaction is committed when activity completes and all database actions are committed if all database calls succeed is equivalent to the Applicant's **opening a read committed transaction on an application server**).

Underwood does not explicitly teach "**starting a local transaction on a remote server unit**".

However, Powell teaches "**starting a local transaction on a remote server unit**" (See Fig. 6, steps 230-249 and Page 8, [0086] wherein Powell's determining if local cache database satisfying user's request or copy the request to the central cache database serve is equivalent to the Applicant's **starting a local transaction on a remote server unit**).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database on the proxy server because the implementation would have enabled Underwood's server systems to improve network performance by caching web pages at the internet and readying the pages closer and available to user on demand.

The combined teaching of the Powell and Underwood references the following: "**receiving a user request on the remote server unit**" (See Powell: Fig. 6, steps 230-249 and Page 8, [0086] wherein Powell's determining if local cache database satisfying user's request or copy the request to the central cache database serve is equivalent to the Applicant's **receiving a user request on the remote server unit**);

"**opening a remote transaction on a central DBMS server using a database subscription manager in response to a data request from the remote server unit, wherein the data request is based on the user request**" (See Powell: Fig. 7, steps 302-322 and Pages 8-9, [0091]-[0094] wherein Powell's proxy server receives a copy of request, requests web page and stores in central cache database is equivalent to the Applicant's **opening a remote transaction on a central DBMS server using a database subscription manager in response to a data request from the remote server unit, wherein the data request is based on the user request**);

"**sending a result from the database subscription manager to the remote server unit using data obtained from the central DBMS server**" (See Powell: Fig. 7, steps 302-322 and Pages 8-9, [0091]-[0094] wherein Powell's proxy server receives a copy of request, requests web page and stores in central cache database is equivalent to the Applicant's **sending a result from the database subscription manager to the remote server unit using data obtained from the central DBMS server**);

"**sending the result from the remote server unit to the application server**" (See Powell: Fig. 1 and Page 3, [0040] wherein Powell's proxy server retrieves web pages and caches the pages to central cache database is equivalent to the Applicant's **sending the result from the remote server unit to the application server**);

"**receiving a commit request on the remote server unit from the application server**" (See Powell: Fig. 6, steps 230-249 and Page 8, [0086] wherein Powell's determining if local cache database satisfying user's request or copy the request to the

central cache database serve is equivalent to the Applicant's **receiving a commit request on the remote server unit from the application server**);

"**sending the commit request to the database subscription manager**" (See Powell: Fig. 7, steps 302-322 and Pages 8-9, [0091]-[0094] wherein Powell's proxy server receives a copy of request, requests web page and stores in central cache database is equivalent to the Applicant's **sending the commit request to the database subscription manager**); and

"**verifying a successful outcome for the commit request**" (See Powell: Page 22, [0238] wherein Powell's servers synchronize with each other is equivalent to the Applicant's **verifying a successful outcome for the commit request**).

As per claim 15, the combined teaching of the Powell and Underwood references "**wherein the read committed transaction comprises a repeatable read transaction, and wherein the method further comprises sending plurality of timestamp messages from the data management unit to the remote server unit on a periodic basis, wherein the remote server unit synchronizes with the central DBMS using the timestamp of the remote server unit transaction to process data requests on the central DBMS**" (See Powell: Fig. 6, steps 224, 230 and 249 and and Page 8, [0086] wherein Powell's data request is performed in a repeatable cycle, and Underwood: col. 54, lines 14-31 wherein Powell's user id and last update timestamp data is stored in database is equivalent to the Applicant's **wherein the read committed transaction comprises a repeatable read transaction, and wherein the method**

further comprises sending plurality of timestamp messages from the data management unit to the remote server unit on a periodic basis, wherein the remote server unit synchronizes with the central DBMS using the timestamp of the remote server unit transaction to process data requests on the central DBMS).

As per claim 16, Underwood teaches the following:

"**mapping rows and associated subscriptions with a unique identifier for each row**" (See col. 55, line 40-63 wherein Underwood's GetValue method return the value of the attributes is equivalent to the Applicant's **wherein the read committed transaction comprises a repeatable read transaction, and wherein the method further comprises sending plurality of timestamp messages from the data management unit to the remote server unit on a periodic basis, wherein the remote server unit synchronizes with the central DBMS using the timestamp of the remote server unit transaction to process data requests on the central DBMS**); and

"**mapping column values to subscribed predicates, checking the unique identifier of a changed row for containment within subscribed rows, checking the column values of changed rows for containment in subscribed predicates**" (See col. 54, lines 60-65 wherein Underwood's getColumnNames method returns the database table column names is equivalent to the Applicant's **wherein the read committed transaction comprises a repeatable read transaction, and wherein the method further comprises sending plurality of timestamp messages from the data management unit to the remote server unit on a periodic basis, wherein the**

remote server unit synchronizes with the central DBMS using the timestamp of the remote server unit transaction to process data requests on the central DBMS).

Underwood does not explicitly teach "**notifying affected distributed cache systems to implement the changed rows as updates**".

However, Powell teaches "**notifying affected distributed cache systems to implement the changed rows as updates**" (See Fig. 8, element 352 and Page 9, [0100] wherein Powell's an attention subsystem is implemented to handle all user interface types of interaction and message sent by a central cache database suggests the teaching of **notifying affected distributed cache systems to implement the changed rows as updates**).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine the teaching of Powell with Underwood reference by implementing the cache database on the proxy server because the implementation would have enabled Underwood's server systems to improve network performance by caching web pages at the internet and readying the pages closer and available to user on demand.

Conclusion

7. The prior art made of record

A. U.S. Patent No. 6,718,535

B. U.S. Patent Application 2002/0073167

The prior art made of record and not relied upon is considered pertinent to the Applicant's disclosure.

C. U.S. Patent No. 6,081,518

D. U.S. Patent No. 5,551,046

E. U.S. Patent No. 6,845,503

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuen S Lu whose telephone number is (571) 272-4114. The examiner can normally be reached on Monday-Friday (8:00 am-5:00 pm). If attempts to reach the examiner by telephone pre unsuccessful, the examiner's Supervisor, Jean R. Homere, Esq. can be reached on (571) 272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Kuen S. Lu
Patent Examiner
January 25, 2006

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